

LISTING OF CLAIMS

Claim 1 (currently amended): A stent consisting of essentially triangular cells, each triangular cell comprising:

    a first loop containing section, the first loop containing section arranged generally in the circumferential direction,

    a second loop containing section, the second loop containing section arranged generally in the circumferential direction and joined to the first loop containing section at a first junction; and

    a third loop containing section joined to the first loop containing section at a second junction and joined to the second loop containing section at a third junction;

    wherein a plurality of first loop containing sections form a first band of loops and a plurality of second and third loop containing sections form a second band of loops, the first and second bands alternating along the longitudinal axis of the stent; and

    wherein the first, second, and third loop containing sections include legs that are substantially aligned oriented along the longitudinal axis, and at least one of the legs in any one of the loop containing sections is shorter than at least one other leg in the same loop containing section within the triangular cell; and

    wherein the first loop containing section has wider legs than the second and third loop containing sections.

Claim 2 (original): A stent according to claim 1, wherein the first loop containing section is relatively adapted to enable radial support, and the second and third loop containing sections are relatively adapted to enable longitudinal flexibility.

Claim 3 (previously presented): A stent according to claim 2, wherein the second and third loop containing sections are adapted to compensate for foreshortening of the first loop containing section when the stent is expanded.

Claim 4 (previously presented): A stent according to claim 3, wherein the first loop containing section has three loops.

Claim 5 (original): A stent according to claim 4, wherein the second loop containing section has two loops.

Claim 6 (original): A stent according to claim 5, wherein the third loop containing section has two loops.

Claims 7-8 (canceled)

Claim 9 (previously presented) A stent according to claims 1 or 5, wherein the second and first junctions are circumferentially aligned.

Claim 10 (original) A stent according to claims 1 or 2, wherein each cell in the stent encompasses the same area.

Claim 11 (original) A stent according to claims 1 or 2, wherein the cell is arranged so that when expanded a length of the cell along a circumference of the stent is longer than a length of a cell along the longitudinal axis of the stent.

Claim 12. (withdrawn) A stent according to claims 1 or 2, wherein the stent is made from NiTi.

Claim 13. (withdrawn) A stent according to claim 12, wherein a cell of the stent is symmetrical about a line parallel to a longitudinal axis of the stent.

Claim 14. (withdrawn) A stent according to claims 1 or 2, wherein at least one cell with a larger size is provided to allow access to a side branch lumen.

Claim 15. (withdrawn) A stent according to claims 1 or 2, wherein the cells are arranged into a plurality of bands, and the cells in one band are larger than the cells in the remaining band so as to provide access to a side branch in a vessel.

Claim 16. (withdrawn) A stent according to claims 1 or 2, wherein the cells are arranged into a plurality of bands and the cells in at least one band are adapted to have a different radial force than the cells in the remaining bands.

Claim 17. (withdrawn) -A stent according to claims 1 or 2, wherein the cells are arranged into a plurality of bands and the cells in at least one band are adapted to have a different longitudinal flexibility than the cells in the remaining bands.

Claim 18. (withdrawn) A stent according to claims 1 or 2, wherein the cells are arranged into a plurality of bands and the cells in at least one band are adapted so that upon expansion of the stent the band expands to a diameter which is different than the diameter of the remaining portions of the stent.

Claim 19. (withdrawn) A stent according to claims 1 or 2, wherein the cells are arranged into a plurality of bands, and the number of cells in at least one band is different than the number of cells in another band.

Claim 20 (original) A stent according to claims 1 or 2, wherein the stent is finished in one of the following ways: plating with a radiopaque material, plating with a protective material, embedding with medicine, or covering with a material.

Claim 21 (currently amended) A stent for widening a vessel in the human body consisting of:

    a plurality of first meander patterns having loops;

    a plurality of second meander patterns having loops intertwined with the first meander patterns to form triangular cells, each of said triangular cells having at least one loop containing section arranged generally in the circumferential direction, the loop containing section having legs that are ~~substantially aligned~~ oriented along the longitudinal axis of the stent, wherein at least one of the legs of the loop containing section is shorter than at least one other leg in the same loop containing section within the triangular cell and the first meander patterns are joined together through the second meander patterns; and wherein the legs of the first meander pattern are wider than at least one of the legs of the second meander pattern.

Claim 22 (original): A stent according to claim 21 wherein the first meander patterns are comprised of:

    even first meander patterns; and

    odd first meander patterns which are 180° out of phase with the even first meander patterns, the odd first meander patterns occurring between every two even first meander patterns.

Claim 23 (original): A stent according to claims 21 or 22 wherein the second meander patterns are comprised of:

    even second meander patterns; and

    odd second meander patterns occurring between every two even second meander patterns.

Claim 24 (original): A stent according to claim 21, wherein each of the triangular cells is comprised of a first loop containing section, a second loop containing section, and a third loop containing section.

Claim 25 (original): A stent according to claim 24, wherein the first loop containing section is formed by a portion of a first meander pattern and the second and third loop containing sections are formed by portions of one or more second meander patterns.

Claims 26-27 (cancelled):

Claim 28 (previously presented): A stent according to claim 21, wherein the first meander pattern has three loops per cell.

Claim 29 (previously presented): A stent according to claim 23, wherein the second meander patterns comprise at least four loops per cell.

Claim 30 (previously presented): A stent according to claim 24 wherein the first and second meander patterns have center lines that are substantially orthogonal.

Claim 31 (original): A stent according to claim 24, wherein the first loop containing section has two loops facing toward the interior of the cell.

Claim 32 (previously presented): A stent according to claim 24, wherein the second and third loop containing sections each have two loops.

Claim 33 (original): A stent according to claims 24, 28 or 32, wherein the loops of the second and third loop containing sections are adapted to compensate for the tendency of the loops of the first loop containing section to foreshorten when the stent is expanded.

Claim 34 (cancelled)

Claim 35 (original) A stent according to claims 24, 28 or 32, wherein the odd and even second meander portions have portions in common wherein said meanders run in the same direction.

Claims 36-50 (cancelled)

Claim 51 (withdrawn) A multicellular stent comprising;  
a plurality of bands of first cells, each first cell including a first loop disposed generally longitudinally opposite a second loop and a first pair of flexible compensating members joined to the cell sections containing the first and second loop;  
a plurality of bands of second cells, each second cell including a third loop disposed generally longitudinally opposite a fourth loop and a second pair of flexible members joined to the cell sections containing the third and fourth loops to form a cell, the bands of second cells interspersed with the bands of first cells,  
wherein the first loop and the second loop are substantially aligned along a longitudinal axis of the stent, and wherein the third loop and the fourth loop are offset along the longitudinal axis.

Claim 52 (withdrawn) A multicellular stent according to claim 51 wherein the loops of the cell are wider than the flexible members of the cell so that the loops provide more radial support.

Claim 53 (withdrawn) A multicellular stent according to claim 51 wherein each flexible member of the second pair of flexible members includes:  
a first portion with a first end and a second end;  
a second portion with a first end and a second end;  
a third portion with a first end and a second end;

a curved portion with a first area of inflection disposed between the second end of the first portion and the second end of the second portion; and

a curved portion with a second area of inflection disposed between the first end of the second portion and the first end of the third portion.

Claim 54 (withdrawn) A multicellular stent according to claim 53 wherein each flexible member of the first pair of flexible members includes a flexible arcuate compensating member.

Claim 55 (withdrawn) A multicellular stent according to claim 51, wherein the bands of cells alternate with the bands of the second cells.

Claim 56 (withdrawn) A multicellular stent according to claim 51, wherein the bands of the cells are chosen so as to produce sections of the stent with increased radial rigidity.

Claim 57 (withdrawn) A multicellular stent according to claim 51, wherein the bands of cells at the ends of the stents are adapted to be more longitudinally flexible than the bands of cells in the remainder of the stent.

Claim 58 (withdrawn) A multicellular stent according to claim 51, wherein the stent is made from either stainless steel or NiTi.

Claim 59 (withdrawn) A multicellular stent comprising:

a plurality of bands of square cells, each square cell including a first loop disposed generally longitudinally opposite a second loop, and a first pair of flexible compensating members joined to the legs of the first and second loop;

a plurality of bands of triangular cells, each triangular cell comprising a first loop containing section arranged generally in the circumferential direction, a second loop containing section connected to the first loop containing section, and a third loop containing section connected to the first loop containing section and the second loop containing section,

wherein the bands of triangular cells are interspersed with the bands of square cells to form the stent.

Claim 60 (withdrawn) A multicellular stent according to claim 59, wherein the bands of the square cells alternate with the bands of the triangular cells.

Claim 61 (withdrawn) A multicellular stent according to claim 59, wherein the bands of cells at the ends of the stents are adapted to be more longitudinally flexible than the bands of cells in the remainder of the stent.

Claim 62 (withdrawn) A multicellular stent according to claim 59, wherein the first loop containing section has two loops facing the interior of the cell.

Claim 63 (withdrawn) A multicellular stent according to claim 59, wherein the second and third loop containing sections each have at least one loop facing the interior of the cell.

Claim 64 (withdrawn) A multicellular stent according to claim 59, wherein the first and second loop are formed of members which are wider than the pair of flexible compensating members.

Claim 65 (withdrawn) A multicellular stent according to claim 59, wherein the first loop is formed of members which are wider than members forming the second and third loop.

Claim 66 (withdrawn) A multicellular stent according to claim 59, wherein the first loop containing section has some legs of loops which are shorter than other legs of loops.

Claims 67-94 (cancelled)

Claim 95 (currently amended): A stent consisting of a plurality of essentially triangular cells, each triangular cell comprising:

    a first loop containing section that includes a plurality of loops and legs, the first loop containing section arranged generally in the circumferential direction, the loops in said first loop containing section occurring at a first frequency;

a second loop containing section that includes a plurality of loops and legs, the second loop containing section arranged generally in the circumferential direction, the loops in said second loop containing section occurring at a second frequency; and

a third loop containing section that includes a plurality of loops and legs, the loops in said third loop containing section also occurring at [[a]] said second frequency that is higher than said first frequency, said third loop containing section joined to said first and second loop containing sections ~~such that a plurality of first loop containing sections are joined together through the second and third loop containing sections without connection directly between the first loop containing sections;~~

wherein the loop containing sections include legs that are ~~substantially aligned~~ oriented along the longitudinal axis, and at least one of said legs in any one of the loop containing sections is shorter than at least one other leg in the same loop containing section within the triangular cell; and

wherein the first loop containing section has wider legs than the second and third loop containing sections and the first loop containing sections are 180 degrees out of phase with each other.

Claim 96 (previously presented): A stent according to claim 95, wherein the first loop containing section is relatively adapted to enable radial support and the second and third loop containing sections are relatively adapted to enable longitudinal flexibility.

Claim 97 (previously presented): A stent according to claim 95, wherein the first loop containing sections have wider legs than the second and third loop containing sections.

Claim 98 (previously presented): A stent according to claim 95, wherein the first loop containing section has two loops for every three loops combined of said second and third loop containing sections.

Claim 99 (previously presented): A stent according to claim 95, wherein the loops in the second and third loop containing sections provide improved flexibility.

Claim 100 (previously presented): A stent according to claim 99, wherein, while flexing, loops in the second and third loop containing sections have maximal strain of the expanded stent within a blood vessel that is lower than the elastic limit of the material of the stent.

Claim 101 (cancelled):

Claim 102 (currently amended): A stent according to any of claim [[101]] 95, wherein the first loop containing section is joined to said second and third loop containing sections such as to form a plurality of cells, each of which include two loops of said first loop containing section and three loops of said second and third loop containing sections combined.

Claim 103 (cancelled)

Claim 104 (original): A stent according to claim 95, wherein substantially each cell in the stent encompasses the same area.

Claim 105 (original): A stent according to claim 95, wherein the cell is arranged so that when expanded a length of the cell along a circumference of the stent is longer than a length of a cell along the longitudinal axis of the stent.

Claims 106 (withdrawn) A stent according to claims 95, wherein the stent is made from NiTi.

Claim 107 (withdrawn) A stent according to claim 106, wherein a cell of the stent is symmetrical about a line parallel to a longitudinal axis of the stent.

Claim 108 (currently amended): A stent for widening a vessel in the human body formed of a plurality of essentially triangular cells comprising:

    a plurality of first circumferential bands consisting essentially of a basically sinusoidal pattern of loops at a first frequency,

    a plurality of second circumferential bands consisting essentially of a basically sinusoidal pattern of loops at a second frequency higher than said first frequency, alternating with said first circumferential bands and periodically coupled thereto to form the triangular cells ;

    wherein the circumferential bands have legs that are substantially aligned oriented along the longitudinal axis of the stent and at least one leg of one of the circumferential band is shorter than another leg of the same circumferential band; and

    wherein the first circumferential bands have wider legs than the second circumferential bands.

Claim 109 (previously presented): A stent according to claim 108 wherein the first circumferential bands containing a pattern of loops comprise:

    even first circumferential bands containing a pattern of loops; and

    odd first circumferential bands containing a pattern of loops which are 180° out of phase with the loops of the even first circumferential bands, an odd first circumferential band occurring between every two even first circumferential bands.

Claim 110 (previously presented): A stent according to claim 108, wherein each cell includes two loops of one of said plurality of first circumferential bands and three loops of one of said plurality of second circumferential bands.

Claim 111 (original): A stent according to claim 108, wherein each cell includes a number of loops of said first circumferential band corresponding to two cycles of said first frequency and a number of loops of said second circumferential band corresponding to three cycles of said second frequency.

Claim 112 (cancelled)

Claim 113 (previously presented): A stent according to claim 108, wherein the higher frequency of the loops in said second circumferential bands provide improved flexibility.

Claim 114 (previously presented): A stent according to claim 113, wherein, while flexing, elements in the higher frequency loops have maximal strain that is lower than the elastic limit of the material of the stent.

Claim 115 (cancelled)

Claim 116 (previously presented): A stent according to claim 108, wherein the first circumferential bands have loops forming two cycles per cell.

Claim 117 (previously presented): A stent according to claim 108, wherein the second circumferential bands have loops forming three cycles per cell.

Claim 118 (original): The stent of claim 95 wherein said stent is self-expanding.

Claim 119 (original): The stent of claim 95 wherein said stent is balloon expanded.

Claims 120-121 (cancelled)

Claim 122 (previously presented): A stent according to claims 21 or 22, wherein the second meander patterns consist essentially of even second meander patterns.

Claim 123-124 (cancelled)

Claim 125 (previously presented): A stent according to claim 100, wherein the stent is exposed to repeated flexing of a vessel caused by the systolic cycle in a coronary artery.

Claims 126-129 (cancelled)